

WHAT IS CLAIMED IS:

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1 A method of manufacturing an ink jet printing module comprising:  
2 contacting a first component of an ink jet printing module having a surface with a  
3 thermoplastic bonding component; and  
4 heating the surface to bond the surface to the thermoplastic bonding component.

1 2. The method of claim 1, further comprising applying pressure to the surface and the  
2 thermoplastic bonding component.

1 3. The method of claim 2, wherein pressure is applied during heating.

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1 4. The method of claim 1, wherein the surface and the thermoplastic bonding  
2 component are substantially free of liquid adhesive.

1 5. The method of claim 1, further comprising contacting a second component of the  
2 ink jet printing module having a surface with the thermoplastic bonding component; and  
3 heating the surface to bond the surface to the thermoplastic bonding component.

1 6. The method of claim 1, wherein the first component of the ink jet printing module  
2 is a piezoelectric element.

1 7. The method of claim 6, wherein the thermoplastic bonding component includes an  
2 electrode pattern.

1 8. The method of claim 6, wherein the piezoelectric element is lead zirconium  
2 titanate.

1 9. The method of claim 1, wherein the thermoplastic bonding component has a  
2 thickness between 1 micron and 150 microns.

1 10. The method of claim 1, wherein the thermoplastic bonding component has a  
2 thickness between 10 micron and 125 microns.

1 11. The method of claim 1, wherein the thermoplastic bonding component has a  
2 thickness between 20 microns and 50 microns.

1 12. The method of claim 1, wherein the thermoplastic bonding component includes  
2 an adhesive polyimide.

1 13. The method of claim 1, wherein the ink jet printing module includes an ink  
2 channel, the piezoelectric element being positioned to subject ink within the channel to  
3 jetting pressure, and electrical contacts arranged for activation of the piezoelectric element.

1 14. The method of claim 13, wherein the ink jet printing module includes a series of  
2 channels.

1 15. The method of claim 13, wherein the thermoplastic bonding component is placed  
2 over the ink channel and includes a filter.

1 16. The method of claim 15, wherein the filter includes a repeating pattern of units  
2 having a plurality of openings.

1 17. The method of claim 16, wherein a land between the units is at least 50 microns.

1 18. The method of claim 1, wherein the module includes an orifice plate and the  
2 method further comprises adhering a protector strip over the orifice plate.

1 19. The method of claim 18, wherein the orifice plate includes a thermoplastic  
2 bonding material adjacent to the protector strip.

1 *Sub A6* 20. The method of claim 18, wherein the protector strip includes a thermoplastic  
2 bonding material adjacent to the orifice strip.

1 21. A method of manufacturing an ink jet printing module comprising:  
2 contacting a first component of an ink jet printing module having a surface with a

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3 thermoplastic bonding component;  
4 contacting a second component of the ink jet printing module having a surface with  
5 the thermoplastic bonding component; and  
6 heating the surface to bond the surfaces to the thermoplastic bonding component.

1 22. The method of claim 21, further comprising applying pressure to the surface and  
2 the thermoplastic bonding component.

1 23. The method of claim 21, wherein pressure is applied during heating.

1 24. The method of claim 21, wherein the surface and the thermoplastic bonding  
2 component are substantially free of liquid adhesive.

1 25. The method of claim 21, wherein the first component of the ink jet printing  
2 module is a piezoelectric element.

1 26. The method of claim 21, wherein the ink jet printing module includes an ink  
2 channel, the piezoelectric element being positioned to subject ink within the channel to  
3 jetting pressure, and electrical contacts arranged for activation of the piezoelectric element.

1 27. The method of claim 26, wherein the thermoplastic bonding component is placed  
2 over the ink channel and includes a filter including a repeating pattern of units having a  
3 plurality of openings and a land between the units is at least 50 microns.

1 28. The method of claim 21, wherein the module includes an orifice plate and the  
2 method further comprises adhering a protector strip over the orifice plate.

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1 29. An ink jet printing module comprising a piezoelectric element having a surface,  
2 and a thermoplastic bonding component heat-bonded to the surface.

1 30. The ink jet printing module of claim 29, wherein the thermoplastic bonding  
2 component includes a first surface heat-bonded to the surface of the piezoelectric element  
3 and a second surface heat-bonded to a surface of an ink jet printing module component.

1 31. The ink jet printing module of claim 29, wherein the thermoplastic bonding  
2 component includes an electrode pattern.

1 32. The ink jet printing module of claim 29, wherein the piezoelectric element is lead  
2 zirconium titanate.

1 33. The ink jet printing module of claim 29, wherein the thermoplastic bonding  
2 component has a thickness between 1 micron and 150 microns.

1 34. The ink jet printing module of claim 29, wherein the thermoplastic bonding  
2 component has a thickness between 10 micron and 125 microns.

1 35. The ink jet printing module of claim 29, wherein the thermoplastic bonding  
2 component has a thickness between 20 microns and 50 microns.

1 36. The ink jet printing module of claim 29, wherein the thermoplastic bonding  
2 component includes an adhesive polyimide.

1 37. The ink jet printing module of claim 29, further comprising an ink channel, the  
2 piezoelectric element being positioned to subject ink within the channel to jetting pressure,  
3 and electrical contacts arranged for activation of the piezoelectric element.

1 38. The ink jet printing module of claim 37, further comprising a series of channels.

1 39. The ink jet printing module of claim 38, wherein each of said channels is covered  
2 by a single piezoelectric element.

1 40. The ink jet printing module of claim 37, wherein the thermoplastic bonding  
2 component covers the ink channel and includes a filter.

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2 41. The ink jet printing module of claim 40, wherein the filter including a repeating  
3 pattern of units having a plurality of openings and a land between the units is at least 50  
microns.

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2 42. The ink jet printing module of claim 41, wherein the width is 300 to 495 microns.

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2 43. The ink jet printing module of claim 29, further comprising an orifice plate and a  
3 protector strip adhered to the orifice plate, wherein either the orifice plate or the protector  
strip includes a thermoplastic bonding material.

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